# Freeform Search

**Database:** US Pre-Grant Publication Full-Text Database
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IBM Technical Disclosure Bulletins

**Term:** L5 same bacteri$

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## Search History

**DATE: Tuesday, October 12, 2004** Printable Copy Create Case

| Set Name side by side | Query | Hit Count | Set Name result set |
|---|---|---|---|
| *DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI; PLUR=YES; OP=ADJ* | | | |
| L6 | L5 same bacteri$ | 81 | L6 |
| L5 | sialyltransferase | 827 | L5 |
| L4 | L2 and bacter$ | 8 | L4 |
| L3 | L2 same jejuni | 1 | L3 |
| L2 | alpha 2,3-sialyltransferase | 25 | L2 |
| L1 | alpha 2,3-sialyltranasferase | 0 | L1 |

END OF SEARCH HISTORY

n e b b g e e e e b f f ff e ch f b e

L6: Entry 48 of 81 File: PGPB Mar 21, 2002

OCUMENT-IDENTIFIER: US 20020034805 A1
ITLE: FUSION PROTEINS FOR USE IN ENZYMATIC SYNTHYESIS OF OLIGOSACCHARIDES

etail Description Paragraph:
0071] Sialyltransferases from prokaryotes have been described by, for example, Weisgerber et
1. (1991) Glycobiol. 1:357-365; Frosch, M. et al. (1991) Mol. Microbiol. 5:1251-1263; and
ilbert, M. et al. (1996) J. Biol. Chem. 271:28271-28276. It has been suggested that the
acterial sialyltransferases might have a wider spectrum of acceptors than their mammalian
ounterparts (Kajihara, Y. et al. (1996) J. Org. Chem. 61:8632-8635 and Gilbert et al., Eur.
iochem. 249: 187-194 (1997)).

etail Description Paragraph:
0088] The invention also provides fusion polypeptides that are useful for sialylation
eactions. These fusion polypeptides include a catalytic domain from a sialyltransferase and
atalytic domain from a CMP-sialic acid synthetase (EC 2.7.7.43, CMP-N-acetylneuraminic acid
ynthetase). Such genes are available from, for example, Mus musculus (GenBank AJ006215,
unster et al., Proc. Natl. Acad. Sci. U.S.A. 95: 9140-9145 (1998)), rat (Rodriguez-Aparicio
1. (1992) J Biol. Chem. 267: 9257-63), Haemophilus ducreyi (Tullius et al. (1996) J. Biol.
hem. 271: 15373-80), Neisseria meningitidis (Ganguli et al. (1994) J. Bacteriol. 176: 4583-9
roup B streptococci (Haft et al. (1994) J. Bacteriol. 176: 7372-4), and E. coli (GenBank
05023, Zapata et al. (1989) J. Biol. Chem. 264: 14769-14774). Alternatively, fusion proteins
or sialylation reactions can have a catalytic domain from either or both of GlcNAc 2'
pimerase (EC 5.1.3.8), which converts GlcNAc to ManNAc, and neuraminic acid aldolase (EC
.1.3.3; SwissProt Accession No. P06995), which in turn converts the ManNAc to sialic acid.



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# Print Selection

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Section: Page(s): Print Copy: 1

| Select? | Document ID | Section(s) | Page(s) | # Pages to print | Database |
|---|---|---|---|---|---|
| ☑ | 6709834 | all | all | N/A | PGPB,USPT,USOC,EPAB,JPAB,DWPI |
| ☑ | 6689604 | all | all | N/A | PGPB,USPT,USOC,EPAB,JPAB,DWPI |
| ☑ | 6503744 | all | all | N/A | PGPB,USPT,USOC,EPAB,JPAB,DWPI |
| ☑ | 6699705 | all | all | N/A | PGPB,USPT,USOC,EPAB,JPAB,DWPI |
| ☑ | 6399336 | all | all | N/A | PGPB,USPT,USOC,EPAB,JPAB,DWPI |
| ☑ | 6096529 | all | all | N/A | PGPB,USPT,USOC,EPAB,JPAB,DWPI |
| ☑ | 5962294 | all | all | N/A | PGPB,USPT,USOC,EPAB,JPAB,DWPI |
| ☑ | 5908766 | all | all | N/A | PGPB,USPT,USOC,EPAB,JPAB,DWPI |
| ☑ | 6255094 | all | all | N/A | PGPB,USPT,USOC,EPAB,JPAB,DWPI |
| ☑ | 5827714 | all | all | N/A | PGPB,USPT,USOC,EPAB,JPAB,DWPI |
| ☑ | US6255094B | all | all | N/A | PGPB,USPT,USOC,EPAB,JPAB,DWPI |

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     (FILE 'HOME' ENTERED AT 13:51:26 ON 12 OCT 2004)

     INDEX 'ADISCTI, ADISINSIGHT, ADISNEWS, AGRICOLA, AQUALINE, ANABSTR, ANTE,
     AQUASCI, BIOBUSINESS, BIOCOMMERCE, BIOENG, BIOSIS, BIOTECHABS, BIOTECHDS,
     BIOTECHNO, CABA, CANCERLIT, CAPLUS, CEABA-VTB, CEN, CIN, CONFSCI, CROPB,
     CROPU, DISSABS, DDFB, DDFU, DGENE, ...' ENTERED AT 14:00:32 ON 12 OCT 2004
               SEA ALPHA 2,3-SIALYLTRANSFERASE
              ---------
               1   FILE ADISCTI
               1   FILE AGRICOLA
               3   FILE ANABSTR
               1   FILE BIOBUSINESS
               1   FILE BIOCOMMERCE
              15   FILE BIOENG
             223   FILE BIOSIS
             160   FILE BIOTECHNO
              15   FILE CABA
              98   FILE CANCERLIT
             327   FILE CAPLUS
               8   FILE CEABA-VTB
               1   FILE CIN
              19   FILE DISSABS
               1   FILE EMBAL
             209   FILE EMBASE
             142   FILE ESBIOBASE
               1   FILE FEDRIP
               2   FILE FROSTI
               1   FILE FSTA
             383   FILE GENBANK
              58   FILE IFIPAT
              14   FILE JICST-EPLUS
             102   FILE LIFESCI
             266   FILE MEDLINE
             110   FILE PASCAL
               1   FILE PROMT
             320   FILE SCISEARCH
              75   FILE TOXCENTER
             262   FILE USPATFULL
               7   FILE USPAT2
              27   FILE WPIDS
              27   FILE WPINDEX
L1              QUE ALPHA 2,3-SIALYLTRANSFERASE
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     FILE 'CAPLUS, SCISEARCH, MEDLINE, USPATFULL, BIOSIS, EMBASE, BIOTECHNO,
     ESBIOBASE, PASCAL, LIFESCI, CANCERLIT' ENTERED AT 14:04:01 ON 12 OCT 2004
L2            47 S L1 AND JEJUNI
L3            37 DUP REM L2 (10 DUPLICATES REMOVED)

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L3 ANSWER 1 OF 37 USPATFULL on STN DUPLICATE 1

| | |
|---|---|
| ACCESSION NUMBER: | 2004:33951 USPATFULL |
| TITLE: | Lipopolysaccharide .**alpha**.-**2**, **3 sialyltransferase** of Campylobacter **jejuni** and its uses |
| INVENTOR(S): | Gilbert, Michel, Hull, CANADA<br>Wakarchuk, Warren W., Gloucester, CANADA |
| PATENT ASSIGNEE(S): | National Research Council of Canada, Ottawa, CANADA (non-U.S. corporation) |

| | NUMBER | KIND | DATE |
|---|---|---|---|
| PATENT INFORMATION: | US 6689604 | B1 | 20040210 |
| APPLICATION INFO.: | US 1999-272960 | | 19990318 (9) |

| | NUMBER | DATE |
|---|---|---|
| PRIORITY INFORMATION: | US 1998-78891P | 19980320 (60) |

| | |
|---|---|
| DOCUMENT TYPE: | Utility |
| FILE SEGMENT: | GRANTED |
| PRIMARY EXAMINER: | Smith, Lynette R. F. |
| ASSISTANT EXAMINER: | Portner, Ginny Allen |
| LEGAL REPRESENTATIVE: | Townsend and Townsend and Crew LLP |
| NUMBER OF CLAIMS: | 30 |
| EXEMPLARY CLAIM: | 1 |
| NUMBER OF DRAWINGS: | 3 Drawing Figure(s); 4 Drawing Page(s) |
| LINE COUNT: | 1583 |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The structure and specificity of a recombinant .**alpha**. **2,3-sialyltransferase** from Campylobacter spp., is disclosed. Also provided are methods for using the . **alpha**.**2,3-sialyltransferase** in the production of desired carbohydrate structures and nucleic acids that encode the sialyltransferase.

L3 ANSWER 2 OF 37 USPATFULL on STN

| | |
|---|---|
| ACCESSION NUMBER: | 2004:233335 USPATFULL |
| TITLE: | Nucleic acids encoding sialytransferases from C. **jejuni** |
| INVENTOR(S): | Gilbert, Michel, Hull, CANADA<br>Wakarchuk, Warren W., Gloucester, CANADA |
| PATENT ASSIGNEE(S): | National Research Council of Canada, Ottawa, CANADA (non-U.S. corporation) |

| | NUMBER | KIND | DATE |
|---|---|---|---|
| PATENT INFORMATION: | US 2004180406 | A1 | 20040916 |
| APPLICATION INFO.: | US 2003-735419 | A1 | 20031211 (10) |
| RELATED APPLN. INFO.: | Continuation of Ser. No. US 2001-816028, filed on 21 Mar 2001, GRANTED, Pat. No. US 6699705<br>Continuation-in-part of Ser. No. US 2000-495406, filed on 31 Jan 2000, GRANTED, Pat. No. US 6503744 | | |

| | NUMBER | DATE |
|---|---|---|
| PRIORITY INFORMATION: | US 1999-118213P | 19990201 (60) |

| | |
|---|---|
| DOCUMENT TYPE: | Utility |
| FILE SEGMENT: | APPLICATION |
| LEGAL REPRESENTATIVE: | TOWNSEND AND TOWNSEND AND CREW, LLP, TWO EMBARCADERO CENTER, EIGHTH FLOOR, SAN FRANCISCO, CA, 94111-3834 |
| NUMBER OF CLAIMS: | 42 |
| EXEMPLARY CLAIM: | 1 |
| NUMBER OF DRAWINGS: | 4 Drawing Page(s) |

LINE COUNT: 5466
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB This invention provides prokaryotic glycosyltransferases, including a bifunctional sialyltransferase that has both an α2,3- and an α2,8-activity. A β1,4-GalNAc transferase and a β1,3-galactosyltransferase are also provided by the invention, as are other glycosyltransferases and enzymes involved in synthesis of lipooligosaccharide (LOS). The glycosyltransferases can be obtained from, for example, Campylobacter species, including C. **jejuni**. In additional embodiments, the invention provides nucleic acids that encode the glycosyltransferases, as well as expression vectors and host cells for expressing the glycosyltransferases.

L3 ANSWER 3 OF 37 USPATFULL on STN
ACCESSION NUMBER: 2004:202948 USPATFULL
TITLE: Haemophilus influenzae sialyltransferase and methods of use thereof
INVENTOR(S): Apicella, Michael A., Solon, IA, UNITED STATES
Gibson, Bradford W., Berkeley, CA, UNITED STATES
Phillips, Nancy J., Berkeley, CA, UNITED STATES
Jones, Paul A., Coralville, IA, UNITED STATES

| | NUMBER | KIND | DATE | |
|---|---|---|---|---|
| PATENT INFORMATION: | US 2004156837 | A1 | 20040812 | |
| APPLICATION INFO.: | US 2003-366548 | A1 | 20030212 | (10) |

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: Schwegman, Lundberg, Woessner & Kluth, P.A., P.O. Box 2938, Minneapolis, MN, 55402
NUMBER OF CLAIMS: 29
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 4 Drawing Page(s)
LINE COUNT: 2265
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention is directed to sialytransferases, such as SiaA sialytransferases isolated from Haemophilus influenzae. Further provided herein are methods for producing sialylated lipooligosaccharides, vaccines, and host cells and systems for the production of sialylated lipooligosaccharides.

L3 ANSWER 4 OF 37 USPATFULL on STN
ACCESSION NUMBER: 2004:196860 USPATFULL
TITLE: Lipopolysaccharide **alpha** -2, **3 sialyltransferase** of campylobacter **jejuni** and its uses
INVENTOR(S): Gilbert, Michel, Hull, CANADA
Wakarchuk, Warren W., Glouchester, CANADA
PATENT ASSIGNEE(S): National Research Council of Canada, Ottawa, CANADA (non-U.S. corporation)

| | NUMBER | KIND | DATE | |
|---|---|---|---|---|
| PATENT INFORMATION: | US 2004152165 | A1 | 20040805 | |
| APPLICATION INFO.: | US 2004-799016 | A1 | 20040311 | (10) |

RELATED APPLN. INFO.: Division of Ser. No. US 2002-58636, filed on 29 Jan 2002, GRANTED, Pat. No. US 6709834 Division of Ser. No. US 1999-272960, filed on 18 Mar 1999, GRANTED, Pat. No. US 6689604

| | NUMBER | DATE | |
|---|---|---|---|
| PRIORITY INFORMATION: | US 1998-78891P | 19980320 | (60) |

DOCUMENT TYPE: Utility

FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: TOWNSEND AND TOWNSEND AND CREW, LLP, TWO EMBARCADERO CENTER, EIGHTH FLOOR, SAN FRANCISCO, CA, 94111-3834
NUMBER OF CLAIMS: 34
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 4 Drawing Page(s)
LINE COUNT: 1545
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The structure and specificity of a recombinant .**alpha**. **2,3-sialyltransferase** from Campylobacter spp., is disclosed. Also provided are methods for using the . **alpha**.**2,3-sialyltransferase** in the production of desired carbohydrate structures and nucleic acids that encode the sialyltransferase.

L3 ANSWER 5 OF 37 USPATFULL on STN
ACCESSION NUMBER: 2004:184970 USPATFULL
TITLE: Glycoconjugation methods and proteins/peptides produced by the methods
INVENTOR(S): DeFrees, Shawn, North Wales, PA, UNITED STATES
Zopf, David, Wayne, PA, UNITED STATES
Bayer, Robert, San Diego, CA, UNITED STATES
Bowe, Caryn, Doylestown, PA, UNITED STATES
Hakes, David, Willow Grove, PA, UNITED STATES
Chen, Xi, Lansdale, PA, UNITED STATES
PATENT ASSIGNEE(S): Neose Technologies, Inc. (U.S. corporation)

| | NUMBER | KIND | DATE |
|---|---|---|---|
| PATENT INFORMATION: | US 2004142856 | A1 | 20040722 |
| APPLICATION INFO.: | US 2003-410913 | A1 | 20030409 (10) |

RELATED APPLN. INFO.: Continuation-in-part of Ser. No. US 2003-360779, filed on 19 Feb 2003, PENDING Continuation-in-part of Ser. No. US 2003-360770, filed on 6 Jan 2003, PENDING Continuation-in-part of Ser. No. US 2002-287994, filed on 5 Nov 2002, PENDING Continuation of Ser. No. WO 2002-US32263, filed on 9 Oct 2002, PENDING

| | NUMBER | DATE |
|---|---|---|
| PRIORITY INFORMATION: | US 2002-407527P | 20020828 (60) |
| | US 2002-407527P | 20020828 (60) |
| | US 2002-404249P | 20020816 (60) |
| | US 2002-396594P | 20020717 (60) |
| | US 2002-391777P | 20020625 (60) |
| | US 2002-387292P | 20020607 (60) |
| | US 2001-334301P | 20011128 (60) |
| | US 2001-334233P | 20011128 (60) |
| | US 2001-334692P | 20011121 (60) |
| | US 2001-328523P | 20011010 (60) |

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: MORGAN, LEWIS & BOCKIUS LLP, 1701 MARKET STREET, PHILADELPHIA, PA, 19103-2921
NUMBER OF CLAIMS: 88
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 497 Drawing Page(s)
LINE COUNT: 16544
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention includes methods and compositions for remodeling a peptide molecule, including the addition or deletion of one or more glycosyl groups to a peptide, and/or the addition of a modifying group to a peptide.

L3 ANSWER 6 OF 37 USPATFULL on STN

ACCESSION NUMBER: 2004:178391 USPATFULL

TITLE: Remodeling and glycoconjugation of peptides

INVENTOR(S): DeFrees, Shawn, North Wales, PA, UNITED STATES
Zopf, David, Wayne, PA, UNITED STATES
Bayer, Robert, San Diego, CA, UNITED STATES
Bowe, Caryn, Doylestown, PA, UNITED STATES
Hakes, David, Willow Grove, PA, UNITED STATES
Chen, Xi, Lansdale, PA, UNITED STATES

PATENT ASSIGNEE(S): Neose Technologies, Inc. (U.S. corporation)

| | NUMBER | KIND | DATE |
|---|---|---|---|
| PATENT INFORMATION: | US 2004137557 | A1 | 20040715 |
| APPLICATION INFO.: | US 2002-287994 | A1 | 20021105 (10) |

RELATED APPLN. INFO.: Continuation of Ser. No. WO 2002-US32263, filed on 9 Oct 2002, PENDING

| | NUMBER | DATE |
|---|---|---|
| PRIORITY INFORMATION: | US 2002-407527P | 20020828 (60) |
| | US 2002-404249P | 20020816 (60) |
| | US 2002-396594P | 20020717 (60) |
| | US 2002-391777P | 20020625 (60) |
| | US 2002-387292P | 20020607 (60) |
| | US 2001-334301P | 20011128 (60) |
| | US 2001-334233P | 20011128 (60) |

DOCUMENT TYPE: Utility

FILE SEGMENT: APPLICATION

LEGAL REPRESENTATIVE: MORGAN, LEWIS & BOCKIUS LLP, 1701 MARKET STREET, PHILADELPHIA, PA, 19103-2921

NUMBER OF CLAIMS: 447

EXEMPLARY CLAIM: 1

NUMBER OF DRAWINGS: 345 Drawing Page(s)

LINE COUNT: 16205

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention includes methods and compositions for remodeling a peptide molecule, including the addition or deletion of one or more glycosyl groups to a peptide, and/or the addition of a modifying group a peptide.

L3 ANSWER 7 OF 37 USPATFULL on STN

ACCESSION NUMBER: 2004:172476 USPATFULL

TITLE: Glycopegylation methods and proteins/peptides produced by the methods

INVENTOR(S): DeFrees, Shawn, North Wales, PA, UNITED STATES
Zopf, David, Wayne, PA, UNITED STATES
Bayer, Robert, San Diego, CA, UNITED STATES
Bowe, Caryn, Doylestown, PA, UNITED STATES
Hakes, David, Willow Grove, PA, UNITED STATES
Chen, Xi, Lansdale, PA, UNITED STATES

PATENT ASSIGNEE(S): Neose Technologies, Inc. (U.S. corporation)

| | NUMBER | KIND | DATE |
|---|---|---|---|
| PATENT INFORMATION: | US 2004132640 | A1 | 20040708 |
| APPLICATION INFO.: | US 2003-411012 | A1 | 20030409 (10) |

RELATED APPLN. INFO.: Continuation-in-part of Ser. No. WO 2002-US32263, filed on 9 Oct 2002, PENDING

| | NUMBER | DATE |
|---|---|---|
| PRIORITY INFORMATION: | US 2002-407527P | 20020828 (60) |
| | US 2002-404249P | 20020816 (60) |
| | US 2002-396594P | 20020717 (60) |

| | | |
|---|---|---|
| | US 2002-391777P | 20020625 (60) |
| | US 2002-387292P | 20020607 (60) |

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: MORGAN, LEWIS & BOCKIUS LLP, 1701 MARKET STREET, PHILADELPHIA, PA, 19103-2921
NUMBER OF CLAIMS: 77
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 497 Drawing Page(s)
LINE COUNT: 19255
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention includes methods and compositions for remodeling a peptide molecule, including the addition or deletion of one or more glycosyl groups to a peptide, and/or the addition of a modifying group to a peptide.

L3 ANSWER 8 OF 37 USPATFULL on STN
ACCESSION NUMBER: 2004:165351 USPATFULL
TITLE: Follicle stimulating hormone: remodeling and glycoconjugation of FSH
INVENTOR(S): DeFrees, Shawn, North Wales, PA, UNITED STATES
Zopf, David, Wayne, PA, UNITED STATES
Bayer, Robert, San Diego, CA, UNITED STATES
Bowe, Caryn, Doylestown, PA, UNITED STATES
Hakes, David, Willow Grove, PA, UNITED STATES
Chen, Xi, Lansdale, PA, UNITED STATES
PATENT ASSIGNEE(S): Neose Technologies, Inc. (U.S. corporation)

| | NUMBER | KIND | DATE | |
|---|---|---|---|---|
| PATENT INFORMATION: | US 2004126838 | A1 | 20040701 | |
| APPLICATION INFO.: | US 2003-410997 | A1 | 20030409 | (10) |

RELATED APPLN. INFO.: Continuation-in-part of Ser. No. US 2003-360779, filed on 19 Feb 2003, PENDING Continuation-in-part of Ser. No. US 2003-360770, filed on 6 Jan 2003, PENDING Continuation-in-part of Ser. No. US 2002-287994, filed on 5 Nov 2002, PENDING Continuation of Ser. No. WO 2002-US32263, filed on 9 Oct 2002, PENDING

| | NUMBER | DATE |
|---|---|---|
| PRIORITY INFORMATION: | US 2002-407527P | 20020828 (60) |
| | US 2002-404249P | 20020816 (60) |
| | US 2002-396594P | 20020717 (60) |
| | US 2002-391777P | 20020625 (60) |
| | US 2002-387292P | 20020607 (60) |
| | US 2001-334301P | 20011128 (60) |
| | US 2001-334233P | 20011128 (60) |

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: MORGAN, LEWIS & BOCKIUS LLP, 1701 MARKET STREET, PHILADELPHIA, PA, 19103-2921
NUMBER OF CLAIMS: 115
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 497 Drawing Page(s)
LINE COUNT: 19355
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention includes methods and compositions for remodeling a peptide molecule, including the addition or deletion of one or more glycosyl groups to a peptide, and/or the addition of a modifying group to a peptide.

L3 ANSWER 9 OF 37 USPATFULL on STN
ACCESSION NUMBER: 2004:150947 USPATFULL

TITLE: Interferon beta: remodeling and glycoconjugation of interferon beta

INVENTOR(S): DeFrees, Shawn, North Wales, PA, UNITED STATES
Zopf, David, Wayne, PA, UNITED STATES
Bayer, Robert, San Diego, CA, UNITED STATES
Bowe, Caryn, Doylestown, PA, UNITED STATES
Hakes, David, Willow Grove, PA, UNITED STATES
Chen, Xi, Lansdale, PA, UNITED STATES

PATENT ASSIGNEE(S): Neose Technologies, Inc. (U.S. corporation)

| | NUMBER | KIND | DATE |
|---|---|---|---|
| PATENT INFORMATION: | US 2004115168 | A1 | 20040617 |
| APPLICATION INFO.: | US 2003-410930 | A1 | 20030409 (10) |

RELATED APPLN. INFO.: Continuation-in-part of Ser. No. US 2003-360779, filed on 19 Feb 2003, PENDING Continuation-in-part of Ser. No. US 2003-360770, filed on 6 Jan 2003, PENDING Continuation-in-part of Ser. No. US 2002-287994, filed on 5 Nov 2002, PENDING Continuation of Ser. No. WO 2002-US32263, filed on 9 Oct 2002, PENDING

| PRIORITY INFORMATION: | NUMBER | DATE |
|---|---|---|
| | US 2002-407527P | 20020828 (60) |
| | US 2002-404249P | 20020816 (60) |
| | US 2002-396594P | 20020717 (60) |
| | US 2002-391777P | 20020625 (60) |
| | US 2002-387292P | 20020607 (60) |
| | US 2001-334301P | 20011128 (60) |
| | US 2001-334233P | 20011128 (60) |
| | US 2001-344692P | 20011019 (60) |
| | US 2001-328523P | 20011010 (60) |

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: MORGAN, LEWIS & BOCKIUS LLP, 1701 MARKET STREET, PHILADELPHIA, PA, 19103-2921
NUMBER OF CLAIMS: 119
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 497 Drawing Page(s)
LINE COUNT: 19412
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention includes methods and compositions for remodeling a peptide molecule, including the addition or deletion of one or more glycosyl groups to a peptide, and/or the addition of a modifying group to a peptide.

L3 ANSWER 10 OF 37 USPATFULL on STN
ACCESSION NUMBER: 2004:107626 USPATFULL
TITLE: Interferon alpha: remodeling and glycoconjugation of interferon alpha

INVENTOR(S): DeFrees, Shawn, North Wales, PA, UNITED STATES
Zopf, David, Wayne, PA, UNITED STATES
Bayer, Robert, San Diego, CA, UNITED STATES
Bowe, Caryn, Doylestown, PA, UNITED STATES
Hakes, David, Willow Grove, PA, UNITED STATES
Chen, Xi, Lansdale, PA, UNITED STATES

PATENT ASSIGNEE(S): Neose Technologies, Inc. (U.S. corporation)

| | NUMBER | KIND | DATE |
|---|---|---|---|
| PATENT INFORMATION: | US 2004082026 | A1 | 20040429 |
| APPLICATION INFO.: | US 2003-411049 | A1 | 20030409 (10) |

RELATED APPLN. INFO.: Continuation-in-part of Ser. No. US 2003-360779, filed on 19 Feb 2003, PENDING Continuation-in-part of Ser.

No. US 2003-360770, filed on 6 Jan 2003, PENDING Continuation-in-part of Ser. No. US 2002-287994, filed on 5 Nov 2002, PENDING Continuation of Ser. No. WO 2002-US32263, filed on 9 Oct 2002, PENDING

| | NUMBER | DATE |
|---|---|---|
| PRIORITY INFORMATION: | US 2002-407527P | 20020828 (60) |
| | US 2002-404249P | 20020816 (60) |
| | US 2002-396594P | 20020717 (60) |
| | US 2002-391777P | 20020625 (60) |
| | US 2002-387292P | 20020607 (60) |
| | US 2001-334301P | 20011128 (60) |
| | US 2001-334233P | 20011128 (60) |
| | US 2001-344692P | 20011019 (60) |
| | US 2001-328523P | 20011010 (60) |

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: MORGAN, LEWIS & BOCKIUS LLP, 1701 MARKET STREET, PHILADELPHIA, PA, 19103-2921
NUMBER OF CLAIMS: 126
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 497 Drawing Page(s)
LINE COUNT: 19445
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention includes a multitude of methods and compositions for remodeling a peptide molecule, including the addition or deletion of one or more glycosyl groups to a peptide, and/or the addition of a modifying group to a peptide.

L3 ANSWER 11 OF 37 USPATFULL on STN
ACCESSION NUMBER: 2004:101966 USPATFULL
TITLE: Granulocyte colony stimulating factor: remodeling and glycoconjugation of G-CSF
INVENTOR(S): DeFrees, Shawn, North Wales, PA, UNITED STATES
Zopf, David, Wayne, PA, UNITED STATES
Bayer, Robert, San Diego, CA, UNITED STATES
Bowe, Caryn, Doylestown, PA, UNITED STATES
Hakes, David, Willow Grove, PA, UNITED STATES
Chen, Xi, Lansdale, PA, UNITED STATES
PATENT ASSIGNEE(S): Neose Technologies, Inc. (U.S. corporation)

| | NUMBER | KIND | DATE |
|---|---|---|---|
| PATENT INFORMATION: | US 2004077836 | A1 | 20040422 |
| APPLICATION INFO.: | US 2003-410962 | A1 | 20030409 (10) |

RELATED APPLN. INFO.: Continuation-in-part of Ser. No. US 2003-360779, filed on 19 Feb 2003, PENDING Continuation-in-part of Ser. No. US 2003-360770, filed on 6 Jan 2003, PENDING Continuation-in-part of Ser. No. US 2002-287994, filed on 5 Nov 2002, PENDING Continuation of Ser. No. WO 2002-US32263, filed on 9 Oct 2002, PENDING

| | NUMBER | DATE |
|---|---|---|
| PRIORITY INFORMATION: | US 2002-407527P | 20020828 (60) |
| | US 2002-404249P | 20020816 (60) |
| | US 2002-396594P | 20020717 (60) |
| | US 2002-391777P | 20020625 (60) |
| | US 2002-387292P | 20020607 (60) |
| | US 2001-334301P | 20011128 (60) |
| | US 2001-334233P | 20011128 (60) |
| | US 2001-344692P | 20011019 (60) |
| | US 2001-328523P | 20011010 (60) |

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: MORGAN, LEWIS & BOCKIUS LLP, 1701 MARKET STREET, PHILADELPHIA, PA, 19103-2921
NUMBER OF CLAIMS: 111
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 497 Drawing Page(s)
LINE COUNT: 19316
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention includes methods and compositions for remodeling a peptide molecule, including the addition or deletion of one or more glycosyl groups to a peptide, and/or the addition of a modifying group to a peptide.

L3 ANSWER 12 OF 37 USPATFULL on STN
ACCESSION NUMBER: 2004:83455 USPATFULL
TITLE: Protein remodeling methods and proteins/peptides produced by the methods
INVENTOR(S): DeFrees, Shawn, North Wales, PA, UNITED STATES
Zopf, David, Wayne, PA, UNITED STATES
Bayer, Robert, San Diego, CA, UNITED STATES
Hakes, David, Willow Grove, PA, UNITED STATES
Chen, Xi, Lansdale, PA, UNITED STATES
PATENT ASSIGNEE(S): Neose Technologies, Inc. (U.S. corporation)

| | NUMBER | KIND | DATE |
|---|---|---|---|
| PATENT INFORMATION: | US 2004063911 | A1 | 20040401 |
| APPLICATION INFO.: | US 2003-411026 | A1 | 20030409 (10) |

RELATED APPLN. INFO.: Continuation-in-part of Ser. No. US 2003-360779, filed on 19 Feb 2003, PENDING Continuation-in-part of Ser. No. US 2003-360770, filed on 6 Jan 2003, PENDING Continuation-in-part of Ser. No. US 2002-287994, filed on 5 Nov 2002, PENDING Continuation of Ser. No. WO 2002-US32263, filed on 9 Oct 2002, PENDING

| PRIORITY INFORMATION: | NUMBER | DATE |
|---|---|---|
| | US 2002-407527P | 20020828 (60) |
| | US 2002-404249P | 20020816 (60) |
| | US 2002-396594P | 20020717 (60) |
| | US 2002-391777P | 20020625 (60) |
| | US 2002-387292P | 20020607 (60) |
| | US 2001-334301P | 20011128 (60) |
| | US 2001-334233P | 20011128 (60) |
| | US 2001-344692P | 20011019 (60) |
| | US 2001-328523P | 20011010 (60) |

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: MORGAN, LEWIS & BOCKIUS LLP, 1701 MARKET STREET, PHILADELPHIA, PA, 19103-2921
NUMBER OF CLAIMS: 39
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 497 Drawing Page(s)
LINE COUNT: 18872
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention includes methods and compositions for remodeling a peptide molecule, including the addition or deletion of one or more glycosyl groups to a peptide, and/or the addition of a modifying group to a peptide.

L3 ANSWER 13 OF 37 USPATFULL on STN
ACCESSION NUMBER: 2004:57444 USPATFULL
TITLE: Alpha galalctosidase a: remodeling and glycoconjugation

of alpha galactosidase A

INVENTOR(S): DeFrees, Shawn, North Wales, PA, UNITED STATES
Zopf, David, Wayne, PA, UNITED STATES
Bayer, Robert, San Diego, CA, UNITED STATES
Bowe, Caryn, Doylestown, PA, UNITED STATES
Hakes, David, Willow Grove, PA, UNITED STATES
Chen, Xi, Lansdale, PA, UNITED STATES

PATENT ASSIGNEE(S): Neose Technologies, Inc. (U.S. corporation)

| | NUMBER | KIND | DATE |
|---|---|---|---|
| PATENT INFORMATION: | US 2004043446 | A1 | 20040304 |
| APPLICATION INFO.: | US 2003-411037 | A1 | 20030409 (10) |

RELATED APPLN. INFO.: Continuation-in-part of Ser. No. WO 2002-US32263, filed on 9 Oct 2002, PENDING

| PRIORITY INFORMATION: | NUMBER | DATE |
|---|---|---|
| | US 2002-407527P | 20020828 (60) |
| | US 2002-404249P | 20020816 (60) |
| | US 2002-396594P | 20020717 (60) |
| | US 2002-391777P | 20020625 (60) |
| | US 2002-387292P | 20020607 (60) |

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: MORGAN, LEWIS & BOCKIUS LLP, 1701 MARKET STREET, PHILADELPHIA, PA, 19103-2921
NUMBER OF CLAIMS: 122
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 497 Drawing Page(s)
LINE COUNT: 19395
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention includes methods and compositions for remodeling a peptide molecule, including the addition or deletion of one or more glycosyl groups to a peptide, and/or the addition of a modifying group to a peptide.

L3 ANSWER 14 OF 37 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN

ACCESSION NUMBER: 2004:237501 BIOSIS
DOCUMENT NUMBER: PREV200400237395
TITLE: Lipopolysaccharide alpha-2,3 sialytransferase of campylobacter **jejuni** and its uses.
AUTHOR(S): Gilbert, Michel [Inventor, Reprint Author]; Wakarchuk, Warren W. [Inventor]
CORPORATE SOURCE: Quebec, Canada
ASSIGNEE: National Research Council of Canada, Ottawa, Canada
PATENT INFORMATION: US 6709834 March 23, 2004
SOURCE: Official Gazette of the United States Patent and Trademark Office Patents, (Mar 23 2004) Vol. 1280, No. 4. http://www.uspto.gov/web/menu/patdata.html. e-file. ISSN: 0098-1133 (ISSN print).
DOCUMENT TYPE: Patent
LANGUAGE: English
ENTRY DATE: Entered STN: 28 Apr 2004
Last Updated on STN: 28 Apr 2004

AB The structure and specificity of a recombinant alpha2,3-sialyltransferase from Campylobacter spp., is disclosed. Also provided are methods for using the alpha2,3-sialyltransferase in the production of desired carbohydrate structures and nucleic acids that encode the sialyltransferase.

L3 ANSWER 15 OF 37 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2004:106956 CAPLUS
DOCUMENT NUMBER: 140:316978
TITLE: Structural analysis of the sialyltransferase CstII from Campylobacter **jejuni** in complex with a substrate analog
AUTHOR(S): Chiu, Cecilia P. C.; Watts, Andrew G.; Lairson, Luke L.; Gilbert, Michel; Lim, Daniel; Wakarchuk, Warren W.; Withers, Stephen G.; Strynadka, Natalie C. J.
CORPORATE SOURCE: Department of Biochemistry and Molecular Biology, University of British Columbia, Vancouver, BC, V6T 1Z3, Can.
SOURCE: Nature Structural & Molecular Biology (2004), 11(2), 163-170
CODEN: NSMBCU; ISSN: 1545-9993
PUBLISHER: Nature Publishing Group
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Sialic acid terminates oligosaccharide chains on mammalian and microbial cell surfaces, playing critical roles in recognition and adherence. The enzymes that transfer the sialic acid moiety from cytidine-5'-monophospho-N-acetyl-neuraminic acid (CMP-NeuAc) to the terminal positions of these key glycoconjugates are known as sialyltransferases. Despite their important biol. roles, little is understood about the mechanism or mol. structure of these membrane-associated enzymes. We report the first structure of a sialyltransferase, that of CstII from Campylobacter **jejuni**, a highly prevalent foodborne pathogen. Our structural, mutagenesis and kinetic data provide support for a novel mode of substrate binding and glycosyl transfer mechanism, including essential roles of a histidine (general base) and two tyrosine residues (coordination of the phosphate leaving group). This work provides a framework for understanding the activity of several sialyltransferases, from bacterial to human, and for the structure-based design of specific inhibitors.

REFERENCE COUNT: 53 THERE ARE 53 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 16 OF 37 USPATFULL on STN
ACCESSION NUMBER: 2003:257784 USPATFULL
TITLE: In vitro modification of glycosylation patterns of recombinant glycopeptides
INVENTOR(S): Bayer, Robert J., San Diego, CA, UNITED STATES
PATENT ASSIGNEE(S): Neose Technologies, Inc., Horsham, PA (U.S. corporation)

| | NUMBER | KIND | DATE |
|---|---|---|---|
| PATENT INFORMATION: | US 2003180835 | A1 | 20030925 |
| APPLICATION INFO.: | US 2003-391035 | A1 | 20030317 (10) |

RELATED APPLN. INFO.: Continuation of Ser. No. US 2001-855320, filed on 14 May 2001, PENDING

| | NUMBER | DATE |
|---|---|---|
| PRIORITY INFORMATION: | US 2000-203851P | 20000512 (60) |

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: TOWNSEND AND TOWNSEND AND CREW, LLP, TWO EMBARCADERO CENTER, EIGHTH FLOOR, SAN FRANCISCO, CA, 94111-3834
NUMBER OF CLAIMS: 55
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 5 Drawing Page(s)
LINE COUNT: 2077
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB This invention provides methods for modifying glycosylation patterns of glycopeptides, including recombinantly produced glycopeptides. Also

provided are glycopeptide compositions in which the glycopeptides have a uniform glycosylation pattern.

L3 ANSWER 17 OF 37 USPATFULL on STN

| | |
|---|---|
| ACCESSION NUMBER: | 2003:225846 USPATFULL |
| TITLE: | Polypeptides having beta-1,4-GalNAc transferase activity |
| INVENTOR(S): | Gilbert, Michel, Hull, CANADA<br>Wakarchuk, Warren W., Gloucester, CANADA |
| PATENT ASSIGNEE(S): | National Research Council of Canada, Ottawa, CANADA, K1A 0R6 (non-U.S. corporation) |

| | NUMBER | KIND | DATE |
|---|---|---|---|
| PATENT INFORMATION: | US 2003157658 | A1 | 20030821 |
| | US 6723545 | B2 | 20040420 |
| APPLICATION INFO.: | US 2002-303162 | A1 | 20021121 (10) |

RELATED APPLN. INFO.: Division of Ser. No. US 2001-816028, filed on 21 Mar 2001, PENDING Continuation-in-part of Ser. No. US 2000-495406, filed on 31 Jan 2000, GRANTED, Pat. No. US 6503744

| | NUMBER | DATE |
|---|---|---|
| PRIORITY INFORMATION: | US 1999-118213P | 19990201 (60) |

| | |
|---|---|
| DOCUMENT TYPE: | Utility |
| FILE SEGMENT: | APPLICATION |
| LEGAL REPRESENTATIVE: | TOWNSEND AND TOWNSEND AND CREW, LLP, TWO EMBARCADERO CENTER, EIGHTH FLOOR, SAN FRANCISCO, CA, 94111-3834 |
| NUMBER OF CLAIMS: | 42 |
| EXEMPLARY CLAIM: | 1 |
| NUMBER OF DRAWINGS: | 4 Drawing Page(s) |
| LINE COUNT: | 5466 |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB This invention provides prokaryotic glycosyltransferases, including a bifunctional sialyltransferase that has both an α2,3- and an α2,8-activity. A β1,4-GalNAc transferase and a β1,3-galactosyltransferase are also provided by the invention, as are other glycosyltransferases and enzymes involved in synthesis of lipooligosaccharide (LOS). The glycosyltransferases can be obtained from, for example, Campylobacter species, including C. **jejuni**. In additional embodiments, the invention provides nucleic acids that encode the glycosyltransferases, as well as expression vectors and host cells for expressing the glycosyltransferases.

L3 ANSWER 18 OF 37 USPATFULL on STN

| | |
|---|---|
| ACCESSION NUMBER: | 2003:225845 USPATFULL |
| TITLE: | Polypeptides having beta-1,3-galactosyl transferase activity |
| INVENTOR(S): | Gilbert, Michel, Hull, CANADA<br>Wakarchuk, Warren W., Gloucester, CANADA |
| PATENT ASSIGNEE(S): | National Research Council of Canada, Ottawa, CANADA (non-U.S. corporation) |

| | NUMBER | KIND | DATE |
|---|---|---|---|
| PATENT INFORMATION: | US 2003157657 | A1 | 20030821 |
| APPLICATION INFO.: | US 2002-303134 | A1 | 20021121 (10) |

RELATED APPLN. INFO.: Division of Ser. No. US 2001-816028, filed on 21 Mar 2001, PENDING Continuation-in-part of Ser. No. US 2000-495406, filed on 31 Jan 2000, GRANTED, Pat. No. US 6503744

| NUMBER | DATE |
|---|---|

| | NUMBER | KIND | DATE |
|---|---|---|---|
| PRIORITY INFORMATION: | US 1999-118213P | | 19990201 (60) |

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: TOWNSEND AND TOWNSEND AND CREW, LLP, TWO EMBARCADERO CENTER, EIGHTH FLOOR, SAN FRANCISCO, CA, 94111-3834
NUMBER OF CLAIMS: 42
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 4 Drawing Page(s)
LINE COUNT: 5460
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB This invention provides prokaryotic glycosyltransferases, including a bifunctional sialyltransferase that has both an α2,3- and an α2,8-activity. A β1,4-GalNAc transferase and a β1,3-galactosyltransferase are also provided by the invention, as are other glycosyltransferases and enzymes involved in synthesis of lipooligosaccharide (LOS). The glycosyltransferases can be obtained from, for example, Campylobacter species, including C. **jejuni**. In additional embodiments, the invention provides nucleic acids that encode the glycosyltransferases, as well as expression vectors and host cells for expressing the glycosyltransferases.

L3 ANSWER 19 OF 37 USPATFULL on STN
ACCESSION NUMBER: 2003:225844 USPATFULL
TITLE: Nucleic acids encoding beta-1,4-GaINAc transferase
INVENTOR(S): Gilbert, Michel, Hull, CANADA
Wakarchuk, Warren W., Gloucester, CANADA
PATENT ASSIGNEE(S): National Research Council of Canada, Ottawa, CANADA (non-U.S. corporation)

| | NUMBER | KIND | DATE |
|---|---|---|---|
| PATENT INFORMATION: | US 2003157656 | A1 | 20030821 |
| APPLICATION INFO.: | US 2002-303128 | A1 | 20021121 (10) |

RELATED APPLN. INFO.: Division of Ser. No. US 2001-816028, filed on 21 Mar 2001, PENDING Continuation-in-part of Ser. No. US 2000-495406, filed on 31 Jan 2000, GRANTED, Pat. No. US 6503744

| | NUMBER | DATE |
|---|---|---|
| PRIORITY INFORMATION: | US 1999-118213P | 19990201 (60) |

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: TOWNSEND AND TOWNSEND AND CREW, LLP, TWO EMBARCADERO CENTER, EIGHTH FLOOR, SAN FRANCISCO, CA, 94111-3834
NUMBER OF CLAIMS: 42
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 4 Drawing Page(s)
LINE COUNT: 5474
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB This invention provides prokaryotic glycosyltransferases, including a bifunctional sialyltransferase that has both an α2,3- and an α2,8-activity. A β1,4-GalNAc transferase and a β1,3-galactosyltransferase are also provided by the invention, as are other glycosyltransferases and enzymes involved in synthesis of lipooligosaccharide (LOS). The glycosyltransferases can be obtained from, for example, Campylobacter species, including C. **jejuni**. In additional embodiments, the invention provides nucleic acids that encode the glycosyltransferases, as well as expression vectors and host cells for expressing the glycosyltransferases.

L3 ANSWER 20 OF 37 USPATFULL on STN
ACCESSION NUMBER: 2003:225843 USPATFULL

TITLE: Nucleic acids encoding polypeptides with beta-1,3-galactosyl transferase activity

INVENTOR(S): Gilbert, Michel, Hull, CANADA
Wakarchuk, Warren W., Gloucester, CANADA

PATENT ASSIGNEE(S): National Research Council of Canada, Ottawa, CANADA, C (non-U.S. corporation)

| | NUMBER | KIND | DATE |
|---|---|---|---|
| PATENT INFORMATION: | US 2003157655 | A1 | 20030821 |
| APPLICATION INFO.: | US 2002-303118 | A1 | 20021121 (10) |

RELATED APPLN. INFO.: Division of Ser. No. US 2001-816028, filed on 21 Mar 2001, PENDING Continuation-in-part of Ser. No. US 2000-495406, filed on 31 Jan 2000, GRANTED, Pat. No. US 6503744

| | NUMBER | DATE |
|---|---|---|
| PRIORITY INFORMATION: | US 1999-118213P | 19990201 (60) |

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: TOWNSEND AND TOWNSEND AND CREW, LLP, TWO EMBARCADERO CENTER, EIGHTH FLOOR, SAN FRANCISCO, CA, 94111-3834
NUMBER OF CLAIMS: 42
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 4 Drawing Page(s)
LINE COUNT: 5465
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB This invention provides prokaryotic glycosyltransferases, including a bifunctional sialyltransferase that has both an α2,3- and an α2,8-activity. A β1,4-GalNAc transferase and a β1,3-galactosyltransferase are also provided by the invention, as are other glycosyltransferases and enzymes involved in synthesis of lipooligosaccharide (LOS). The glycosyltransferases can be obtained from, for example, Campylobacter species, including C. **jejuni**. In additional embodiments, the invention provides nucleic acids that encode the glycosyltransferases, as well as expression vectors and host cells for expressing the glycosyltransferases.

L3 ANSWER 21 OF 37 USPATFULL on STN
ACCESSION NUMBER: 2003:213821 USPATFULL
TITLE: Polypeptides having sialyltransferase activity
INVENTOR(S): Gilbert, Michel, Hull, CANADA
Wakarchuk, Warren W., Gloucester, CANADA

PATENT ASSIGNEE(S): National Research Council of Canada, Ottawa, CANADA (non-U.S. corporation)

| | NUMBER | KIND | DATE |
|---|---|---|---|
| PATENT INFORMATION: | US 2003148459 | A1 | 20030807 |
| APPLICATION INFO.: | US 2002-303161 | A1 | 20021121 (10) |

RELATED APPLN. INFO.: Division of Ser. No. US 2001-816028, filed on 21 Mar 2001, PENDING Continuation-in-part of Ser. No. US 2000-495406, filed on 31 Jan 2000, GRANTED, Pat. No. US 6503744

| | NUMBER | DATE |
|---|---|---|
| PRIORITY INFORMATION: | US 1999-118213P | 19990201 (60) |

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: TOWNSEND AND TOWNSEND AND CREW, LLP, TWO EMBARCADERO CENTER, EIGHTH FLOOR, SAN FRANCISCO, CA, 94111-3834
NUMBER OF CLAIMS: 42

EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 4 Drawing Page(s)
LINE COUNT: 5430
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB This invention provides prokaryotic glycosyltransferases, including a bifunctional sialyltransferase that has both an α2,3- and an α2,8-activity. A β1,4-GalNAc transferase and a β1,3-galactosyltransferase are also provided by the invention, as are other glycosyltransferases and enzymes involved in synthesis of lipooligosaccharide (LOS). The glycosyltransferases can be obtained from, for example, Campylobacter species, including C. **jejuni**. In additional embodiments, the invention provides nucleic acids that encode the glycosyltransferases, as well as expression vectors and host cells for expressing the glycosyltransferases.

L3 ANSWER 22 OF 37 USPATFULL on STN
ACCESSION NUMBER: 2003:180815 USPATFULL
TITLE: Practical in vitro sialylation of recombinant glycoproteins
INVENTOR(S): Paulson, James C., Del Mar, CA, UNITED STATES
Bayer, Robert J., San Diego, CA, UNITED STATES
Sjoberg, Eric, San Diego, CA, UNITED STATES
PATENT ASSIGNEE(S): Neose Technologies, Inc., Horsham, PA, UNITED STATES (U.S. corporation)

| | NUMBER | KIND | DATE |
|---|---|---|---|
| PATENT INFORMATION: | US 2003124645 | A1 | 20030703 |
| APPLICATION INFO.: | US 2002-219120 | A1 | 20020813 (10) |

RELATED APPLN. INFO.: Continuation of Ser. No. US 2001-7331, filed on 9 Nov 2001, PENDING Division of Ser. No. US 1998-7741, filed on 15 Jan 1998, GRANTED, Pat. No. US 6399336

| | NUMBER | DATE |
|---|---|---|
| PRIORITY INFORMATION: | WO 1998-US835 | 19980115 |
| | US 1997-35710P | 19970116 (60) |

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: TOWNSEND AND TOWNSEND AND CREW, LLP, TWO EMBARCADERO CENTER, EIGHTH FLOOR, SAN FRANCISCO, CA, 94111-3834
NUMBER OF CLAIMS: 58
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 2 Drawing Page(s)
LINE COUNT: 1146
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB This invention provides methods for practical in vitro sialylation of glycoproteins, including recombinantly produced glycoproteins. The methods are useful for large-scale modification of sialylation patterns.

L3 ANSWER 23 OF 37 USPATFULL on STN
ACCESSION NUMBER: 2003:70985 USPATFULL
TITLE: Lipopolysaccharide **alpha-2, 3 sialyltransferase** of Campylobacter **jejuni** and its uses
INVENTOR(S): Gilbert, Michel, Quebec, CANADA
Wakarchuk, Warren W., Ontario, CANADA
PATENT ASSIGNEE(S): National Research Council of Canada, Ottawa, CANADA (non-U.S. corporation)

| | NUMBER | KIND | DATE |
|---|---|---|---|
| PATENT INFORMATION: | US 2003049270 | A1 | 20030313 |
| | US 6709834 | B2 | 20040323 |

APPLICATION INFO.: US 2002-58636 A1 20020129 (10)
RELATED APPLN. INFO.: Division of Ser. No. US 1999-272960, filed on 18 Mar 1999, PENDING

| | NUMBER | DATE |
|---|---|---|
| PRIORITY INFORMATION: | US 1998-78891P | 19980320 (60) |

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: TOWNSEND AND TOWNSEND AND CREW, LLP, TWO EMBARCADERO CENTER, EIGHTH FLOOR, SAN FRANCISCO, CA, 94111-3834
NUMBER OF CLAIMS: 34
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 4 Drawing Page(s)
LINE COUNT: 1545
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The structure and specificity of a recombinant .**alpha**. **2,3-sialyltransferase** from Campylobacter spp., is disclosed. Also provided are methods for using the . **alpha.2,3-sialyltransferase** in the production of desired carbohydrate structures and nucleic acids that encode the sialyltransferase.

L3 ANSWER 24 OF 37 USPATFULL on STN
ACCESSION NUMBER: 2003:57473 USPATFULL
TITLE: In vitro modification of glycosylation patterns of recombinant glycopeptides
INVENTOR(S): Bayer, Robert J., San Diego, CA, UNITED STATES
PATENT ASSIGNEE(S): Neose Technologies, Inc., Horsham, PA, UNITED STATES (U.S. corporation)

| | NUMBER | KIND | DATE |
|---|---|---|---|
| PATENT INFORMATION: | US 2003040037 | A1 | 20030227 |
| APPLICATION INFO.: | US 2002-219197 | A1 | 20020813 (10) |

RELATED APPLN. INFO.: Continuation of Ser. No. US 2001-855320, filed on 14 May 2001, PENDING

| | NUMBER | DATE |
|---|---|---|
| PRIORITY INFORMATION: | WO 2001-US15693 | 20010514 |
| | US 2000-203851P | 20000512 (60) |

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: TOWNSEND AND TOWNSEND AND CREW, LLP, TWO EMBARCADERO CENTER, EIGHTH FLOOR, SAN FRANCISCO, CA, 94111-3834
NUMBER OF CLAIMS: 55
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 5 Drawing Page(s)
LINE COUNT: 2071
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB This invention provides methods for modifying glycosylation patterns of glycopeptides, including recombinantly produced glycopeptides. Also provided are glycopeptide compositions in which the glycopeptides have a uniform glycosylation pattern.

L3 ANSWER 25 OF 37 USPATFULL on STN
ACCESSION NUMBER: 2003:3494 USPATFULL
TITLE: Vitro modification of glycosylation patterns of recombinant glycopeptides
INVENTOR(S): Bayer, Robert J., San Diego, CA, UNITED STATES
PATENT ASSIGNEE(S): Neose Technologies, Inc., Horsham, PA, UNITED STATES (U.S. corporation)

| | NUMBER | KIND | DATE |
|---|---|---|---|
| PATENT INFORMATION: | US 2003003529 | A1 | 20030102 |
| APPLICATION INFO.: | US 2002-198806 | A1 | 20020719 (10) |

RELATED APPLN. INFO.: Division of Ser. No. US 2001-855320, filed on 14 May 2001, PENDING

| | NUMBER | DATE |
|---|---|---|
| PRIORITY INFORMATION: | WO 2001-US15693 | 20010514 |
| | US 2000-203851P | 20000512 (60) |

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: TOWNSEND AND TOWNSEND AND CREW, LLP, TWO EMBARCADERO CENTER, EIGHTH FLOOR, SAN FRANCISCO, CA, 94111-3834
NUMBER OF CLAIMS: 55
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 5 Drawing Page(s)
LINE COUNT: 2076
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB This invention provides methods for modifying glycosylation patterns of glycopeptides, including recombinantly produced glycopeptides. Also provided are glycopeptide compositions in which the glycopeptides have a uniform glycosylation pattern.

L3 ANSWER 26 OF 37 USPATFULL on STN
ACCESSION NUMBER: 2003:6819 USPATFULL
TITLE: Campylobacter glycosyltransferases for biosynthesis of gangliosides and ganglioside mimics
INVENTOR(S): Gilbert, Michel, Hull, CANADA
Wakarchuk, Warren W., Gloucester, CANADA
PATENT ASSIGNEE(S): National Research Council of Canada, Ottawa, CANADA (non-U.S. corporation)

| | NUMBER | KIND | DATE |
|---|---|---|---|
| PATENT INFORMATION: | US 6503744 | B1 | 20030107 |
| APPLICATION INFO.: | US 2000-495406 | | 20000131 (9) |

| | NUMBER | DATE |
|---|---|---|
| PRIORITY INFORMATION: | US 1999-118213P | 19990201 (60) |

DOCUMENT TYPE: Utility
FILE SEGMENT: GRANTED
PRIMARY EXAMINER: Prouty, Rebecca E.
ASSISTANT EXAMINER: Rao, Manjunath N.
LEGAL REPRESENTATIVE: Townsend and Townsend and Crew LLP
NUMBER OF CLAIMS: 5
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 7 Drawing Figure(s); 4 Drawing Page(s)
LINE COUNT: 4086
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB This invention provides prokaryotic glycosyltransferases, including a bifunctional sialyltransferase that has both an α2,3- and an α2,8-activity. A β1,4-GalNAc transferase and a β1,3-galactosyltransferase are also provided by the invention, as are other glycosyltransferases and enzymes involved in synthesis of lipooligosaccharide (LOS). The glycosyltransferases can be obtained from, for example, Campylobacter species, including C. **jejuni**. In additional embodiments, the invention provides nucleic acids that encode the glycosyltransferases, as well as expression vectors and host cells for expressing the glycosyltransferases.

L3 ANSWER 27 OF 37 SCISEARCH 

on STN
ACCESSION NUMBER: 2003:443221 SCISEARCH
THE GENUINE ARTICLE: 680EE
TITLE: Large-scale in vivo synthesis of the carbohydrate moieties of gangliosides GM1 and GM2 by metabolically engineered Escherichia coli
AUTHOR: Antoine T (Reprint); Priem B; Heyraud A; Greffe L; Gilbert M; Wakarchuk B W; Lam J S; Samain E
CORPORATE SOURCE: Ctr Rech Macromol Vegetales, 601 Rue Chim, BP 53X, F-38041 Grenoble 09, France (Reprint); Ctr Rech Macromol Vegetales, F-38041 Grenoble 09, France; Natl Res Council Canada, Inst Biol Sci, Ottawa, ON K1A 0R6, Canada; Univ Guelph, Dept Microbiol, Guelph, ON N1G 2W1, Canada
COUNTRY OF AUTHOR: France; Canada
SOURCE: CHEMBIOCHEM, (9 MAY 2003) Vol. 4, No. 5, pp. 406-412. Publisher: WILEY-V C H VERLAG GMBH, PO BOX 10 11 61, D-69451 WEINHEIM, GERMANY.
ISSN: 1439-4227.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 28
*ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS*

AB Two metabolically engineered Escherichia coli strains have been constructed to produce the carbohydrate moieties of gangliosides GM2 (GalNAcbeta-4(NeuAcalpha-3)Galbeta-4Glc; Gal=galactose, Glc=glucose Ac=acetyl) and GM1 (Galbeta-3GalNAcbeta-4(NeuAcalpha-3)Galbeta-4Glc. The GM2 oligosaccharide-producing strain TA02 Was devoid of both beta-galactosidase and sialic acid aldolase activities and overexpressed the genes for CMP-NeuAc Synthase (CMP = cytidine monophosphate), **alpha-2,3-sialyltransferase** UDP-GlcNAc (UDP=uridine diphosphate) C4 epimerase, and beta-1,4-GalNAc transferase. When this strain was cultivated on glycerol, exogenously added lactose and sialic acid were shown to be actively internalized into the cytoplasm and converted into GM2 oligosaccharide. The in vivo synthesis of GM1 oligosaccharide was achieved, by taking a similar approach but using strain TAGS, which additionally overexpressed the gene for beta-1,3-galactosyltransferase. In high-cell-density cultures, the production yields for the GM2 and GM1 oligosaccharides were 1.25 g L-1 and 0,89 g L-1, respectively.

L3 ANSWER 28 OF 37 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 2
ACCESSION NUMBER: 2002:276514 CAPLUS
DOCUMENT NUMBER: 136:320378
TITLE: Campylobacter glycosyltransferase genes and enzymes for biosynthesis of gangliosides and ganglioside mimics
INVENTOR(S): Gilbert, Michel; Wakarchuk, Warren W.
PATENT ASSIGNEE(S): National Research Council of Canada, Can.
SOURCE: U.S. Pat. Appl. Publ., 84 pp., Cont.-in-part of U.S. Ser. No. 495,406.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| US 2002042369 | A1 | 20020411 | US 2001-816028 | 20010321 |
| US 6699705 | B2 | 20040302 | | |
| US 6503744 | B1 | 20030107 | US 2000-495406 | 20000131 |
| WO 2002074942 | A2 | 20020926 | WO 2002-CA229 | 20020222 |
| WO 2002074942 | A3 | 20030313 | | |
| WO 2002074942 | B1 | 20030703 | | |

W: AE, AG, AL, AM, AT, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, CZ, DE, DE, DK, DK, DM, DZ, EC, EE, EE, ES, FI, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

| | | | | |
|---|---|---|---|---|
| EP 1385941 | A2 | 20040204 | EP 2002-703414 | 20020222 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | | |
| JP 2004524033 | T2 | 20040812 | JP 2002-574334 | 20020222 |
| US 2003148459 | A1 | 20030807 | US 2002-303161 | 20021121 |
| US 2003157655 | A1 | 20030821 | US 2002-303118 | 20021121 |
| US 2003157656 | A1 | 20030821 | US 2002-303128 | 20021121 |
| US 2003157657 | A1 | 20030821 | US 2002-303134 | 20021121 |
| US 2003157658 | A1 | 20030821 | US 2002-303162 | 20021121 |
| US 6723545 | B2 | 20040420 | | |
| US 2004180406 | A1 | 20040916 | US 2003-735419 | 20031211 |
| PRIORITY APPLN. INFO.: | | | US 1999-118213P | P 19990201 |
| | | | US 2000-495406 | A2 20000131 |
| | | | US 2001-816028 | A 20010321 |
| | | | WO 2002-CA229 | W 20020222 |

AB This invention provides Campylobacter **jejuni** glycosyltransferases, including a bifunctional sialyltransferase that has both an α2,3- and an α2,8-activity. A β1,4-GaINAc transferase and a β1,3-galactosyltransferase are also provided by the invention, as are other glycosyltransferases and enzymes involved in synthesis of lipooligosaccharide (LOS). In addnl. embodiments, the invention provides nucleic acids that encode the glycosyltransferases, as well as expression vectors and host cells for expressing the glycosyltransferases. The enzymes may be used in preparation of gangliosides, lysogangliosides, and mimics of gangliosides and lysogangliosides. Thus, C. **jejuni** gene cstI .**alpha**.2,3-**sialyltransferase**, gene cstII bifunctional α2,3/α2,8-sialyltransferase, gene cgtA β-1,4-N-acetylgalactosaminyltransferase, and gene cgtB β-1,3-galactosyltransferase enzymes were used to prepare the carbohydrate portion of gangliosides GM1a, GM2, GM3, GD1a, GD3, and GT1a.

L3 ANSWER 29 OF 37 USPATFULL on STN

| | |
|---|---|
| ACCESSION NUMBER: | 2002:287597 USPATFULL |
| TITLE: | Practical in vitro sialylation of recombinant glycoproteins |
| INVENTOR(S): | Paulson, James C., Del Mar, CA, UNITED STATES<br>Bayer, Robert J., San Diego, CA, UNITED STATES<br>Sjoberg, Eric, San Diego, CA, UNITED STATES |
| PATENT ASSIGNEE(S): | Neose Technologies, Inc., Horsham, PA (U.S. corporation) |

| | NUMBER | KIND | DATE |
|---|---|---|---|
| PATENT INFORMATION: | US 2002160460 | A1 | 20021031 |
| APPLICATION INFO.: | US 2002-81456 | A1 | 20020221 (10) |
| RELATED APPLN. INFO.: | Continuation of Ser. No. US 1998-7741, filed on 15 Jan 1998, GRANTED, Pat. No. US 6399336 | | |

| | NUMBER | DATE |
|---|---|---|
| PRIORITY INFORMATION: | US 1997-35710P | 19970116 (60) |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | APPLICATION | |

LEGAL REPRESENTATIVE: TOWNSEND AND TOWNSEND AND CREW, LLP, TWO EMBARCADERO CENTER, EIGHTH FLOOR, SAN FRANCISCO, CA, 94111-3834
NUMBER OF CLAIMS: 58
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 2 Drawing Page(s)
LINE COUNT: 1142
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB This invention provides methods for practical in vitro sialylation of glycoproteins, including recombinantly produced glycoproteins. The methods are useful for large-scale modification of sialylation patterns.

L3 ANSWER 30 OF 37 USPATFULL on STN
ACCESSION NUMBER: 2002:258800 USPATFULL
TITLE: Practical in vitro sialylation of recombinant glycoproteins
INVENTOR(S): Paulson, James C., Del Mar, CA, UNITED STATES
Bayer, Robert J., San Diego, CA, UNITED STATES
Sjoberg, Eric, San Diego, CA, UNITED STATES
PATENT ASSIGNEE(S): Neose Technologies, Inc., Horsham, PA, UNITED STATES, 19044 (U.S. corporation)

| | NUMBER | KIND | DATE |
|---|---|---|---|
| PATENT INFORMATION: | US 2002142370 | A1 | 20021003 |
| APPLICATION INFO.: | US 2002-81455 | A1 | 20020221 (10) |

RELATED APPLN. INFO.: Continuation of Ser. No. US 1998-7741, filed on 15 Jan 1998, GRANTED, Pat. No. US 6399336

| | NUMBER | DATE |
|---|---|---|
| PRIORITY INFORMATION: | US 1997-35710P | 19970116 (60) |

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: TOWNSEND AND TOWNSEND AND CREW, LLP, TWO EMBARCADERO CENTER, EIGHTH FLOOR, SAN FRANCISCO, CA, 94111-3834
NUMBER OF CLAIMS: 58
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 2 Drawing Page(s)
LINE COUNT: 1135
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB This invention provides methods for practical in vitro sialylation of glycoproteins, including recombinantly produced glycoproteins. The methods are useful for large-scale modification of sialylation patterns.

L3 ANSWER 31 OF 37 USPATFULL on STN
ACCESSION NUMBER: 2002:221376 USPATFULL
TITLE: Practical in vitro sialylation of recombinant glycoproteins
INVENTOR(S): Paulson, James C., Del Mar, CA, UNITED STATES
Bayer, Robert J., San Diego, CA, UNITED STATES
Sjoberg, Eric, San Diego, CA, UNITED STATES
PATENT ASSIGNEE(S): Cytel Corporation (U.S. corporation)

| | NUMBER | KIND | DATE |
|---|---|---|---|
| PATENT INFORMATION: | US 2002119516 | A1 | 20020829 |
| APPLICATION INFO.: | US 2001-7331 | A1 | 20011109 (10) |

RELATED APPLN. INFO.: Division of Ser. No. US 1998-7741, filed on 15 Jan 1998, PENDING

| | NUMBER | DATE |
|---|---|---|
| PRIORITY INFORMATION: | US 1997-35710P | 19970116 (60) |

DOCUMENT TYPE: Utility

FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: TOWNSEND AND TOWNSEND AND CREW, LLP, TWO EMBARCADERO CENTER, EIGHTH FLOOR, SAN FRANCISCO, CA, 94111-3834
NUMBER OF CLAIMS: 58
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 2 Drawing Page(s)
LINE COUNT: 1150
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB This invention provides methods for practical in vitro sialylation of glycoproteins, including recombinantly produced glycoproteins. The methods are useful for large-scale modification of sialylation patterns.

L3 ANSWER 32 OF 37 USPATFULL on STN
ACCESSION NUMBER: 2002:32520 USPATFULL
TITLE: In vitro modification of glycosylation patterns of recombinant glycopeptides
INVENTOR(S): Bayer, Robert, San Diego, CA, UNITED STATES

| | NUMBER | KIND | DATE | |
|---|---|---|---|---|
| PATENT INFORMATION: | US 2002019342 | A1 | 20020214 | |
| APPLICATION INFO.: | US 2001-855320 | A1 | 20010514 | (9) |

| | NUMBER | DATE | |
|---|---|---|---|
| PRIORITY INFORMATION: | US 2000-203851P | 20000512 | (60) |

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: TOWNSEND AND TOWNSEND AND CREW, TWO EMBARCADERO CENTER, EIGHTH FLOOR, SAN FRANCISCO, CA, 94111-3834
NUMBER OF CLAIMS: 55
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 5 Drawing Page(s)
LINE COUNT: 2069
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB This invention provides methods for modifying glycosylation patterns of glycopeptides, including recombinantly produced glycopeptides. Also provided are glycopeptide compositions in which the glycopeptides have a uniform glycosylation pattern.

L3 ANSWER 33 OF 37 USPATFULL on STN
ACCESSION NUMBER: 2002:129751 USPATFULL
TITLE: Practical in vitro sialylation of recombinant glycoproteins
INVENTOR(S): Paulson, James C., Del Mar, CA, United States
Bayer, Robert J., San Diego, CA, United States
Sjoberg, Eric, San Diego, CA, United States
PATENT ASSIGNEE(S): Neose Technologies, Inc., Horsham, PA, United States (U.S. corporation)

| | NUMBER | KIND | DATE | |
|---|---|---|---|---|
| PATENT INFORMATION: | US 6399336 | B1 | 20020604 | |
| APPLICATION INFO.: | US 1998-7741 | | 19980115 | (9) |

| | NUMBER | DATE | |
|---|---|---|---|
| PRIORITY INFORMATION: | US 1997-35710P | 19970116 | (60) |

DOCUMENT TYPE: Utility
FILE SEGMENT: GRANTED
PRIMARY EXAMINER: Achutamurthy, Ponnathapu
ASSISTANT EXAMINER: Rao, Manjunath N.
LEGAL REPRESENTATIVE: Townsend and Townsend and Crew LLP
NUMBER OF CLAIMS: 87

EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 2 Drawing Figure(s); 2 Drawing Page(s)
LINE COUNT: 1239
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB This invention provides methods for practical in vitro sialylation of glycoproteins, including recombinantly produced glycoproteins. The methods are useful for large-scale modification of sialylation patterns.

L3 ANSWER 34 OF 37 SCISEARCH COPYRIGHT (c) 2004 The Thomson Corporation. on STN
ACCESSION NUMBER: 2001:339631 SCISEARCH
THE GENUINE ARTICLE: 423VN
TITLE: Dependence of the bi-functional nature of a sialyltransferase from Neisseria meningitidis on a single amino acid substitution
AUTHOR: Wakarchuk W W (Reprint); Watson D; St Michael F; Li J J; Wu Y Y; Brisson J R; Young N M; Gilbert M
CORPORATE SOURCE: Natl Res Council Canada, Inst Biol Sci, Immunochem Program, 100 Sussex Dr, Ottawa, ON K1A 0R6, Canada (Reprint); Natl Res Council Canada, Inst Biol Sci, Immunochem Program, Ottawa, ON K1A 0R6, Canada
COUNTRY OF AUTHOR: Canada
SOURCE: JOURNAL OF BIOLOGICAL CHEMISTRY, (20 APR 2001) Vol. 276, No. 16, pp. 12785-12790.
Publisher: AMER SOC BIOCHEMISTRY MOLECULAR BIOLOGY INC, 9650 ROCKVILLE PIKE, BETHESDA, MD 20814 USA.
ISSN: 0021-9258.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 27
*ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS*

AB The L1 immunotype strain 126E of Neisseria meningitidis has been shown to have an N-acetyl-neuraminic acid-containing lipooligosaccharide in which an alpha -linked galactose from a pk epitope is substituted at the O6 position (Wakarchuk, W, W,, Gilbert, M,, Martin, A., Wu, Y,, Brisson, J, R,, Thibault, P,, and Richards, J, C, (1998) Eur. J, Biochem. 254, 626-633), Using a synthetic pk-epitope containing acceptor in glycosyltransferase reactions, we were able to show by NMR analysis of the reaction product that the 126E(L1)-derived sialyltransferase can make both alpha -2,3 and alpha -2,6 linkages to the terminal galactose, Gene disruption experiments showed that the Ist gene in 126E(L1) was responsible for the in vivo addition of the alpha -2,6-linked N-acetyl-neuraminic acid residue. By site-directed mutagenesis it was possible to change the MC58(L3)-derived enzyme into a bifunctional enzyme with a single amino acid change at position 168, where a glycine was changed to an isoleucine. We performed a gene replacement experiment where the 126E(L1) alpha -2,3/6-sialyltransferase was replaced by allelic exchange with the monofunctional MC58(L3) **alpha -2, 3-sialyltransferase** and with the mutant MC58(L3) allele G168I, We observed that the level of LOS sialylation with the G168I allele was very similar to that of the wild type 126E(L1), indicating that residue 168 is the critical residue for the alpha -2,6-sialyltransferase activity in vitro as well as in vivo.

L3 ANSWER 35 OF 37 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 3
ACCESSION NUMBER: 2000:129311 CAPLUS
DOCUMENT NUMBER: 132:304980
TITLE: Biosynthesis of ganglioside mimics in Campylobacter **jejuni** OH4384. Identification of the glycosyltransferase genes, enzymatic synthesis of model compounds, and characterization of nanomole amounts by 600-MHz H and C NMR analysis
AUTHOR(S): Gilbert, Michel; Brisson, Jean-Robert; Karwaski, Marie-France; Michniewicz, Joseph; Cunningham,

Anna-Maria; Wu, Yuyang; Young, N. Martin; Wakarchuk, Warren W.

CORPORATE SOURCE: Institute for Biological Sciences, National Research Council of Canada, Ottawa, ON, K1A 0R6, Can.

SOURCE: Journal of Biological Chemistry (2000), 275(6), 3896-3906
CODEN: JBCHA3; ISSN: 0021-9258

PUBLISHER: American Society for Biochemistry and Molecular Biology

DOCUMENT TYPE: Journal

LANGUAGE: English

AB We have applied two strategies for the cloning of four genes responsible for the biosynthesis of the GT1a ganglioside mimic in the lipooligosaccharide (LOS) of a bacterial pathogen, Campylobacter **jejuni** OH4384, which has been associated with Guillain-Barre syndrome. We first cloned a gene encoding an **.alpha.-2,3-sialyltransferase** (cst-I) using an activity screening strategy. We then used nucleotide sequence information from the recently completed sequence from C. **jejuni** NCTC 11168 to amplify a region involved in LOS biosynthesis from C. **jejuni** OH4384. The LOS biosynthesis locus from C. **jejuni** OH4384 is 11.47 kilobase pairs and encodes 13 partial or complete open reading frames, while the corresponding locus in C. **jejuni** NCTC 11168 spans 13.49 kilobase pairs and contains 15 open reading frames, indicating a different organization between these two strains. Potential glycosyltransferase genes were cloned individually, expressed in Escherichia coli, and assayed using synthetic fluorescent oligosaccharides as acceptors. We identified genes encoding a β-1,4-N-acetylgalactosaminyltransferase (cgtA), a β-1,3-galactosyltransferase (cgtB), and a bifunctional sialyltransferase (cst-II), which transfers sialic acid to O-3 of galactose and to O-8 of a sialic acid that is linked α-2,3- to a galactose. The linkage specificity of each identified glycosyltransferase was confirmed by NMR anal. at 600 MHz on nanomole amts. of model compds. synthesized in vitro. Using a gradient inverse broadband nano-NMR probe, sequence information could be obtained by detection of 3J(C,H) correlations across the glycosidic bond. The role of cgtA and cst-II in the synthesis of the GT1a mimic in C. **jejuni** OH4384 were confirmed by comparing their sequence and activity with corresponding homologs in two related C. **jejuni** strains that express shorter ganglioside mimics in their LOS.

REFERENCE COUNT: 31 THERE ARE 31 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 36 OF 37 CAPLUS 

ACCESSION NUMBER: 1999:626342 CAPLUS
DOCUMENT NUMBER: 131:253359

TITLE: Campylobacter **jejuni** gene cst-I lipopolysaccharide **.alpha.-2,3 sialyltransferase**, its DNA and amino acid sequences, recombinant production, and its acceptor specificity

INVENTOR(S): Gilbert, Michel; Wakarchuk, Warren W.
PATENT ASSIGNEE(S): National Research Council of Canada, Can.

SOURCE: PCT Int. Appl., 47 pp.
CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| WO 9949051 | A1 | 19990930 | WO 1999-CA238 | 19990322 |

W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ,

DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

| | | | | |
|---|---|---|---|---|
| US 6689604 | B1 | 20040210 | US 1999-272960 | 19990318 |
| CA 2323753 | AA | 19990930 | CA 1999-2323753 | 19990322 |
| AU 9928230 | A1 | 19991018 | AU 1999-28230 | 19990322 |
| AU 745040 | B2 | 20020307 | | |
| EP 1082440 | A1 | 20010314 | EP 1999-908717 | 19990322 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI | | | | |
| JP 2002507424 | T2 | 20020312 | JP 2000-538012 | 19990322 |
| US 2003049270 | A1 | 20030313 | US 2002-58636 | 20020129 |
| US 6709834 | B2 | 20040323 | | |
| US 2004152165 | A1 | 20040805 | US 2004-799016 | 20040311 |
| PRIORITY APPLN. INFO.: | | | US 1998-78891P | P 19980320 |
| | | | US 1999-272960 | A 19990318 |
| | | | WO 1999-CA238 | W 19990322 |
| | | | US 2002-58636 | A3 20020129 |

AB The invention provides DNA mols. that encode gene cst-I lipopolysaccharide **.alpha.-2,3 sialyltransferase** of Campylobacter **jejuni**. The DNA sequence of C. **jejuni** gene cst-I, as well as the corresponding amino acid sequence of lipopolysaccharide **.alpha.-2,3 sialyltransferase** are claimed. The invention also provides methods for the recombinant production of lipopolysaccharide **.alpha.-2,3 sialyltransferase** in prokaryotic and eukaryotic cells. The invention further provides the specificity of the C. **jejuni** lipopolysaccharide **.alpha.-2,3 sialyltransferase**. The C. **jejuni** lipopolysaccharide **.alpha.-2,3 sialyltransferase** uses terminal galactose acceptors that are β-(1→4) linked to either glucose or N-acetylglucosamine. The enzyme also uses terminal galactose acceptors that are β-(1→3) linked to N-acetylglucosamine or N-acetylgalactosamine. The enzyme uses cytidine monophosphate-N-acetylneuraminic acid (CMP-Neu5Ac) as the donor. The broad acceptor specificity of lipopolysaccharide **.alpha.-2,3 sialyltransferase** encoded by cst-I demonstrates its utility and makes it an attractive tool for chemo-enzymic synthesis of sialylated oligosaccharides.

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 37 OF 37 SCISEARCH COPYRIGHT (c) 2004 The Thomson Corporation. on STN DUPLICATE 4

ACCESSION NUMBER: 1999:733349 SCISEARCH
THE GENUINE ARTICLE: 238JB
TITLE: Synthesis of a disialylated hexasaccharide of Type VIII Group B Streptococcus capsular polysaccharide
AUTHOR: Eichler E; Jennings H J; Gilbert M; Whitfield D M (Reprint)
CORPORATE SOURCE: NATL RES COUNCIL CANADA, 100 SUSSEX DR, OTTAWA, ON K1A 0R6, CANADA (Reprint); NATL RES COUNCIL CANADA, OTTAWA, ON K1A 0R6, CANADA
COUNTRY OF AUTHOR: CANADA
SOURCE: CARBOHYDRATE RESEARCH, (30 JUN 1999) Vol. 319, No. 1-4, pp. 1-16.
Publisher: ELSEVIER SCI LTD, THE BOULEVARD, LANGFORD LANE, KIDLINGTON, OXFORD OX5 1GB, OXON, ENGLAND.
ISSN: 0008-6215.

DOCUMENT TYPE: Article; Journal
FILE SEGMENT: PHYS; LIFE; AGRI
LANGUAGE: English
REFERENCE COUNT: 21

*ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS*

AB As part of our program to design, develop and prepare protective vaccines against the bacterial pathogens Group B Streptococcus, we report the synthesis of a disialylated hexasaccharide. This hexasaccharide represents a portion of the serotype-specific capsular polysaccharide of Type VIII that has the tetrasaccharide repeat unit {beta-L-Rhap-(1 --> 4)-beta-D-Glcp-(1 --> 4)-[alpha-Neu5Ac-(2 --> 3)]-beta-D-Galp-(1 --> 4)}(n). A tetrasaccharide corresponding to this repeat unit has been synthesized by us [E. Eichler, H.J. Jennings, D.M. Whitfield, J. Carbohydr. Chern., 16 (1997) 385-411]. Since the protective epitopes are believed to involve several. repeat units, methods to extend this tetrasaccharide were examined. This objective requires a glycosylation of the unreactive OH-4 of the beta-L-Rhap, which was accomplished by coupling a D-Galp glycosyl trichloroacetimidate donor with a beta-L-Rhap-(1 --> 4)-D-Glcp acceptor. Subsequent coupling of this trisaccharide as a donor to an a-Neu5Ac-(:2 --> 3)-D-Galp disaccharide acceptor gave a pentasaccharide. The pentasaccharide was deprotected and enzymatically sialylated using an **alpha**-(2 --> 3)-**sialyltransferase** from Campylobacter **jejuni** to give the title hexasaccahride alpha-Neu5Ac-(2 --> 3)-beta-D-Galp-(1 --> 4)-beta-L-Rhap-(1 --> 4)-beta-D-Glcp(1 --> 4)-[alpha-Neu5Ac-(2 --> 3)]-beta-D-Galp-(1 --> O)-(CH2)(3)N-3. 

=>